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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/642,778	08/18/2003	Dac-Kwang Jung	5000-1-407	3694
33942	7590	12/13/2006	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			CURS, NATHAN M	
			ART UNIT	PAPER NUMBER
			2613	

DATE MAILED: 12/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

51

Office Action Summary	Application No.	Applicant(s)	
	10/642,778	JUNG ET AL.	
	Examiner	Art Unit	
	Nathan Curs	2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-11 is/are allowed.
- 6) ☒ Claim(s) 12, 18-21 and 23-27 is/are rejected.
- 7) ☒ Claim(s) 13-17 and 22 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 2, 23 and 25 are objected to because of the following informalities: In claim 2, "multiplexed signal" in line 4 should be "multiplexed signals"; in claim 23, "the central office 100" in line 6 should be "the central office"; in claim 25, line 7, "and optical signals" should be "and dividing optical signals". Appropriate correction is required.
2. Claims 13-17 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to other claims in the alternative only. See MPEP § 608.01(n). Accordingly, the claims have not been further treated on the merits.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 12 and 18-21 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 12, 20 and 21 claims a "second multiplexer/demultiplexer"; however there is no first multiplexer/demultiplexer claimed, therefore the scope of the claims is unclear.

Claim 12 recites the limitation "the multiplexed signal inputted from the first WDM optical source" in lines 20-21. There is insufficient antecedent basis for this limitation in the claim.

Claim 12 recites the limitation "the demultiplexed signals" in line 22; however it's not clear which demultiplexed signals are being referred to.

Art Unit: 2613

Claim 18 recites the limitation "the first wavelength division multiplexer" in lines 1-2. However, claim 12 claims a plurality of first wavelength division multiplexers; it's not clear which one claim 18 is referring to.

Claim 18 recites the limitations "third band-pass filter" and "fourth band-pass filter" in lines 3 and 5; however there are no corresponding first and second band-pass filters claimed; therefore the scope of the claim is unclear.

Claim 19 recites the limitations "fifth band-pass filter" and "sixth band-pass filter" in lines 3 and 5; however there are no corresponding first to fourth band-pass filters claimed; therefore the scope of the claim is unclear.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 23 and 25-27 are rejected under 35 U.S.C. 102(b) as being anticipated by Frigo et al. ("Frigo") (US Patent No. 5742414).

Regarding claim 23, Frigo discloses a passive optical network system including a central office, a local office, and a plurality of subscriber terminals, the local office being connected to the central office and the subscriber terminals through optical fibers and providing optical communication service to the subscriber terminals (fig. 1 and col. 4, lines 60-64), the local office comprising a multiplexer/demultiplexer for demultiplexing optical signals for downstream data service and optical signals for downstream broadcasting service multiplexed and transmitted

Art Unit: 2613

from the central office, and for multiplexing upstream optical signals transmitted from the subscriber terminals (fig. 1, element 20 and col. 4, lines 60-64 and fig. 4 and col. 5, lines 15-65).

Regarding claim 25, Frigo discloses a passive optical network system including a central office, a local office, and a plurality of subscriber terminals connected to the central office through the local office by optical fibers and being provided optical communication service provided from the central office (fig. 1 and col. 4, lines 60-64), a subscriber terminal of said plurality comprising: a wavelength division multiplexer for demultiplexing optical signals transmitted downstream from the local office and dividing optical signals for downstream data service and optical signals for downstream broadcasting service and outputting the divided optical signals, and for multiplexing optical signals for upstream transmission from said subscriber terminal to the local office; a downstream data receiver for receiving optical signals for downstream data service demultiplexed by the wavelength division multiplexer and converting the received optical signals to electric signals; a downstream broadcasting receiver for receiving optical signals for downstream broadcasting service demultiplexed by the wavelength division multiplexer and converting the received optical signals to electric signals; and an upstream optical source for generating optical signals for upstream transmission to the local office through the wavelength division multiplexer (fig. 5 and col. 5, line 66 to col. 6, line 46).

Regarding claim 26, Frigo discloses a passive optical network system as claimed in claim 25, wherein the upstream optical source further comprises a band-pass filter for limiting a wavelength band of the upstream optical source so as to differ from wavelength bands of the optical signals for the downstream data service and so as to differ from wavelength bands of the optical signals for the downstream broadcasting service (col. 5, line 66 to col. 6, line 46).

Art Unit: 2613

Regarding claim 27, Frigo discloses a passive optical network system as claimed in claim 26, wherein the wavelength division multiplexer comprises: a first band-pass filter for passing the wavelength band of the upstream optical source; a second band-pass filter for passing optical signals for downstream data service; and a third band-pass filter for passing the optical signals for downstream broadcasting service (fig. 5, elements 31-34 and col. 5, line 66 to col. 6, line 17).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Frigo (US Patent No. 5742414).

Regarding claim 12, Frigo discloses a passive optical network system including a central office, a local office, and a plurality of subscriber terminals, the central office being connected with a local office through an optical fiber and providing optical communication service to the subscriber terminals through the local office (fig. 1 and col. 4, lines 60-64), the central office comprising: a first wavelength-division-multiplexed (WDM) optical source for providing a downstream broadcasting service to the subscriber terminals (fig. 4, element 43 and col. 5, lines 33-45); a second WDM optical source for providing a downstream data service to the subscriber terminals (fig. 4, element 44 and col. 5, lines 33-45); a plurality of optical receivers for receiving upstream data service signals transmitted from the subscriber terminals and converting the

Art Unit: 2613

received signals to electric signals (fig. 10D and col. 10, lines 18-30); a plurality of first wavelength division multiplexers for multiplexing downstream data service signals to provide downstream data services to the subscriber terminals (fig. 10B and col. 9, lines 51-56 and col. 10, lines 31-33, where a plurality of data service sources like fig. 10B are multiplexed together by another multiplexer not shown in the figures); a multiplexer for multiplexing a plurality of downstream data service signals outputted from the first wavelength division multiplexers (col. 10, lines 31-33, where a plurality of data service sources like fig. 10B are multiplexed together by another multiplexer not shown in the figures); and a second wavelength division multiplexer for multiplexing the multiplexed signals inputted from said multiplexer and the multiplexed signals inputted from the first WDM optical source (col. 10, lines 31-33, where the data service sources like fig. 10B and the broadcast source like fig. 10B are further multiplexed together by another multiplexer not shown in the figure). Frigo does not disclose the plurality of first wavelength division multiplexers are also for demultiplexing upstream data service signals to provide upstream data services from the subscriber terminals, that the multiplexer is a multiplexer/demultiplexer for also demultiplexing upstream data service signals to be transmitted to the first wavelength division multiplexers, or that the second wavelength division multiplexer is also for demultiplexing upstream data service signals inputted from the local office and outputting the demultiplexed signals to said multiplexer/demultiplexer. However, Frigo mentions the use of different wavelengths for upstream and downstream transmission (col. 2, line 29 to col. 3, line 26 and col. 6, lines 35-46) and discloses using single mux/demux for upstream and downstream transmission (fig. 1, element 20 and col. 4, lines 60-64 and fig. 5, elements 31-34 and col. 6, lines 35-46). It would have been obvious to one of ordinary skill in the art at the time of the invention that the other multiplexers and demultiplexers of Frigo could also be used in a mux/demux manner for upstream and downstream transmission, to provide the advantage of

Art Unit: 2613

using an efficient number of multiplexer demultiplexer devices for bidirectional transmission, where one device multiplexes the downstream wavelengths and demultiplexes the upstream wavelengths.

9. Claims 20 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frigo (US Patent No. 5742414) in view of Birk et al. ("Birk") (US Patent Application Publication No. 2002/0093710).

Regarding claim 20, Frigo discloses a passive optical network system as claimed in claim 12, where the multiplexer/demultiplexer is a 1.times.N device (col. 10, lines 31-33), but does not disclose that the multiplexer/demultiplexer is a 1.times.N waveguide grating router (WGR). Birk discloses using WGR for WDM PON systems having switch and broadcast services (paragraphs 0001-0004). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a WGR for the multiplexer/demultiplexer of Frigo, since WGRs provide flexible portioning of broadcast and switched networks using the same physical infrastructure, as taught by Birk.

Regarding claim 24, Frigo discloses a passive optical network system as claimed in claim 23, where the multiplexer/demultiplexer is a 1.times.N device (col. 10, lines 31-33), but does not disclose that the multiplexer/demultiplexer is a 1.times.N waveguide grating router (WGR). However, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Birk with Frigo as described above for claim 20.

Allowable Subject Matter

10. Claims 1-11 are allowable.

Art Unit: 2613

The following is an examiner's statement of reasons for allowance: the claimed configuration for the WDM optical source (the specific amplifier, mux, mirrors, circulator, etc. arranged in the claimed structure) could not be found in the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

11. Claim 22 is objected to as being dependent upon a rejected base claim, but would be allowable if claim 21 was corrected to overcome the 112 rejection and if the 112 problems of the base claim 12 were overcome and if claim 22 was then rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure


- US Patent No. 6577422- Discloses a combined broadcast and data services PON with amplification (see fig. 1 embodiment).
- US Patent Application Publication No. 2003/0039010 – Discloses a PON with multi-wavelength light source and various mux/demuxs (see fig. 13 embodiment).

13. Any inquiry concerning this communication from the examiner should be directed to N. Curs whose telephone number is (571) 272-3028. The examiner can normally be reached on M-F (from 9 AM to 5 PM).

Art Unit: 2613

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan, can be reached at (571) 272-3022. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (800) 786-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pairedirect.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


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